THE AMERICAN ARCHITECT AND BUILDING NEWS.

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CONTENTS.

SUMMARY 137
ROSENGARTEN'S ARCHITECTURAL STYLES 138
ACOUSTICS IN ARCHITECTURE 139
THE ILLUSTRATIONS 141
THE USE OF MOULDED BRICK. II. 141
THE SUPERVISING ARCHITECT'S BILL 142
COMMUNICATIONS: —
Report of Meeting A. I. A. 143
The Goux Earth-Closet and the Ash System 143
NOTES AND CLIPPINGS 144

OUR readers will remember the project which attracted much attention some time ago, for setting up on Bedloe Island, in New York Harbor, a colossal figure representing Liberty Enlightening the World, which was really to carry a lamp, and serve as a lighthouse. The statue was to be a centennial gift from America-loving Frenchmen, under the inspiration of the *Union Franco-Americaine;* and the suggestion is believed to have come from M. Laboulaye, the president of the Union. A meeting was lately held in New York, to raise funds for building the foundation and pedestal, which it was expected that Frenchmen who live in this country would furnish by subscription. We fancy that French residents of America are neither very many nor very rich; but, whether they meet the call or not, it is likely that before the eleventh hour the money will be forthcoming from somewhere, and that our people will not take the awkward position of shaming the costly offering of a traditional friendship for want of a place to put it. The statue, the work of M. Bartholdy, is said to be nearly finished; and it is proposed to lay its foundation-stone on the next Fourth of July, when M. Laboulaye and other distinguished Frenchmen are to be in attendance. The associations of the project are of the pleasantest: what its artistic result will be, cannot be judged till it is done; but an almost equally ambitious scheme has been carried out with good success in the Bavaria at Munich, to say nothing of the great statue recently dedicated in the Thuringian Forest, of which less is known; and, if we fall behind the *éclat* of the great striding figure of ancient Rhodes, we at least shall not have the comparison at hand to worry us.

THERE has been quite an aquarium fever in England of late, the latest and largest development of which is the great aquarium at Westminster. These places of amusement seem to divide public favor with the skating-rinks and music-halls, to the latter of which they are too often assimilated by the amusements they furnish. Now, it appears, the trustees of the American Museum of Natural History have petitioned the Legislature of New York to appropriate fifty thousand dollars for the construction of an Aquarium in Central Park. Such a thing would undoubtedly be greatly liked by the public, as aquariums prove to be in whatever exhibitions they are attached to. They have a charm for most sightseers, who take delight in any unusual glimpse at the movements of animal life, to say nothing of the popular splendors of gold and silver fish. The aquarium that is proposed for New York, being under municipal control instead of being a private speculation dependent on what attractions it could offer to attract a profitable crowd, would be free from the reproach which has attached to that at Westminster, of being a place for low amusements, and of depending on a bar for its support. The appropriation asked for is only to provide the building and its fixtures: it is proposed to stock the tanks by private subscription, — a matter which will itself involve no small expense, and which may be one of indefinite development. A good deal of attention has lately been given in England to the best ways of building aquariums, in which the principal points of difficulty are the form, construction, and lighting of the tanks. A series of articles has appeared in the Building News, in which the subject is discussed in detail with much clearness.

IT is pleasant to note the position assumed by Mayor Stockley of Philadelphia, in vetoing an ordinance of the city passed to allow, by special permission, the construction of a wooden building within the prohibited limits; and this on account not only of the dangers of special legislation, which is a question of politics, but of the constant pressure to evade or set aside the building-laws of cities, which is a matter for architects to consider. Building laws have been passed in most of our largest cities; but there has always been a steady resistance to their enactment, and to the enforcement of them after they are enacted. Even the commonest and most obviously necessary precautions are vigorously resisted, as in the case at Philadelphia; and it is rarely that a city government is found, which has backbone enough to withstand the pressure for exemptions. At this day we believe the architects and engineers of Baltimore are working against a strong resistance from builders and mechanics, in their efforts to get a building-law passed in their city. One might expect to see mechanics active in favor of laws which not only are directly intended to improve their work, but by increasing the solidity and permanency, and therefore the cost of building, should indirectly tend to increase the demand for their labor: yet they are the usual opponents of such measures.

IN a quick-moving community like those of most American cities, it is hard to persuade people to postpone a temporary profit to a permanent gain; and the proportion of their capital which most people are willing to withdraw from the business in which they hope to "turn it over" rapidly, to put it into buildings, is much less than is common in Europe. Nevertheless the most stringent building-laws that it has been found possible to put in force in this country would seem very loose and inadequate in most Continental cities. The humblest French or Italian proprietor, who will build him a house, would disdain a wooden one, and will build it with walls of solid masonry, so that it shall not burn; and, rude as it may be, it shall be strong enough to house his descendants for a couple of centuries. But we, who are believed to earn a larger surplus of our absolute needs than any other people on earth, are content to live in houses, because they are cheap, that will burn up in an hour, and perhaps carry half a city with them, or of which, if they are spared from fire, decay makes an end in a generation. The mayor of Philadelphia has once before vetoed a special ordinance of the same kind, which, however, was re-enacted over his head; and he has since, as he says in his message, let several of them pass, rather than seem to put himself in permanent opposition to the city councils; but this last proposition to build a wooden shanty in a prominent thoroughfare seemed flagrant enough to lead him once more to take a decided stand.

AMONG the thousand and one memorials which we have nowadays, none brings pleasanter suggestions than the theatre which it is proposed to build at Stratford-on-Avon in memory of Shakspeare. Stratford has had a theatre till lately, which from its associations has naturally had more attention from actors of note than English provincial theatres are apt to get, and where pretty much every famous actor has played. This theatre was pulled down three or four years ago; and a subscription has been set on foot to build a

new one as a memorial rather than as a shareholders' speculation. One Mr. Flowers of Stratford has given a charming site of some two acres on the banks of the Avon. The people of Stratford have subscribed liberally; and literateurs and actors in London have taken up the project with interest. A competition was invited for designs for the memorial building, which is to contain a theatre of moderate size, a library and reading-room, and a picture-gallery, the cost being limited to ten thousand pounds, which, however, the designs received show to be insufficient. The competition excited some interest among architects, and twenty-five designs were submitted. The authors of five were selected for a second competition, a premium of twenty-five guineas each being given them as partial compensation. The second competition is not yet decided. An incorporated association has been formed to raise funds for the project; and an appeal is made for subscriptions to both Englishmen and Americans. The 22d of April was appointed for special performances for the benefit of the memorial at a number of English theatres; and a request was sent to American managers to lend their help in like manner.

American Architects may consider that as far as professional responsibility is concerned they live in clover, when they compare their own condition with that of their French brethren. In France the law deals pretty severely with architects, holding them responsible to the whole extent of their means, where work done under their supervision proves defective. A curious case of this severity has just occurred at Lyon, of which we find an account in the *Moniteur des Architectes* of March 31. Some time ago workmen were engaged in a house at Lyon, under direction of an architect, in altering and refitting an upper room which had been used as a kitchen. As one of the men was carrying away a heavy piece of stone, the floor suddenly gave way and went down, with the men upon it, into the room below, killing a servant who was lying there on a bed. From this resulted lawsuits against the proprietor by the lodger in the story below, and by the heirs of the servant who was killed; and a suit by the proprietor against the architect to indemnify himself. Some facts in the case make the decision bear so harshly on the architect that the Architectural Society of Lyon has taken the matter in hand, and made a special investigation of it. The floor, it seems, proved to be a thin vaulting of brick, covered with a layer of mortar on which tiles were laid. Of this fact neither architect nor workman, it is said, had any knowledge. It being the habit at Lyon, as in other French towns, to build floors of timber and boards, and cover them in the same way with tiles, even when the tiles had been removed, and the mortar beneath laid bare, there was nothing to excite suspicion of any unusual construction; and no such brick vaultings were known to exist in the town. There appeared no reason to suppose that even the proprietor was aware of the vault; and the only person who professed to have knowledge of it was the lodger below, an engineer, who had given no warning beforehand, but who testified against the architect to the effect that the vault was faulty in construction, and had already shown marks of old or recent deterioration. Nevertheless judgment went against the architect. It does not appear from the account in the *Moniteur*, whether any efforts were made to procure a reversal of the decision, or what was the ultimate purpose of the action taken by the society.

The vault was of a kind which is common in Tuscany, and perhaps nowhere else, and which was described, we have been told, by Mr. Powers the sculptor, in a letter written from Florence and published soon after the Boston fire. The span of the arch was nearly three metres, say nine feet, its rise only thirteen and a half centimetres (about five inches); and it was built in two courses of brick laid flatwise, making a shell of ten centimetres, or four inches, in thickness. We were once told by an Italian architect, that in Tuscany such vaults were built of a single course of bricks laid flat, and carried over spans of five metres, with hardly a greater proportional rise. It requires, as may be supposed, peculiar skill to build them securely; and only the Tuscan workmen can do it. If it is desired to build them in any of the other Italian provinces, the workmen must be imported, those that are built elsewhere by native workmen being pretty sure to fall. Even in Tuscany, the system was beginning to fall into disuse as lacking security. Such vaults were not known to exist at Lyon, although it was not unusual to vault the ground-floor in stone; and it is supposed that its existence in the house in question, which was built in 1760, must have been due to some Italian workmen being employed in building the house. It is difficult to see how such vaults can ever have carried great weights; and it is probable that they were seldom subjected to any very heavy movable load. It was stated in the report to the society, that the master mason had said at first that the workman who was carrying the stone had let it fall, — a statement which he afterwards denied, perhaps from fear of being held responsible for the act of his man.

ROSENGARTEN'S ARCHITECTURAL STYLES.[1]

We have been often asked what book could be recommended to non-professional readers who wished for general information about architecture; a difficult question to answer, because the current treatises have been either too detailed and voluminous, or else compilations made by writers who had no grasp of their subject, and did not know the significant from the insignificant features of it. Mr. Fergusson's Handbook, now become his History, though very valuable, is much too cyclopædic for popular reading. Mr. Freeman's History, admirably conceived but unequally executed, is out of print, besides which its want of illustrations is fatal to it. The French and German histories are not very easy to get, and are all for one reason or another unsuited to the general reader. In this difficulty we have usually been tempted to recommend Rosengarten as the writer who is on the whole most serviceable, presenting his subject in the most condensed, clearest, and best-connected form for popular understanding, and with the best-chosen illustrations. Unfortunately his work has not been easily accessible hitherto; but Messrs. Appleton & Co. have now published the translation of it in convenient form, and at a reasonable price, which ought to be of great use to lay-readers and to young architectural students.

The things in architecture about which most readers wish to be informed are the general characteristics of the principal styles, their interdependence and order of development, their genealogy, in fact, so far as it is determined; their connection with history as illustrating it, and as illustrated by it; the relative importance and influence of different styles; and the history and transformations of the forms they are acquainted with. For this use Rosengarten's manual is on the whole well adapted. The salient points are well distinguished, and secondary ones either put into the background or suppressed. What is told is well arranged, stated with clearness and an idea of perspective; and it is usually the thing which, on the whole, is best worth telling. The connections of style with style are in a rough way pretty well indicated; though anxiety to keep clear of debatable ground apparently prevents the writer here and there from stating conclusions, which, if at one time or another disputed, may be considered as fairly established. At least the spirit of dogmatism is avoided; and the reader, if in some points

[1] A Handbook of Architectural Styles. Translated from the German of A. Rosengarten, by W. Collett Sanders, with six hundred and thirty-nine illustrations. New York: D. Appleton & Co., 1876.

imperfectly informed when he might have been further enlightened, is not likely to carry away any prejudices which will interfere with his docility to other teaching. The illustrations of the book are many, well chosen for their purpose, and cover a pretty wide range.

It is to be noticed, and the translator mentions it in his preface, that the author is by evident predilection a classicist, — a predilection which is shown by the greater proportional fulness with which the classical part of his subject is treated, and the firmer grasp of its relations which he shows. The tendency of his mind, indeed, is curiously hinted in his division of his subject, — a division peculiar to himself, we believe, — by which he throws all the architecture between the Roman period and the Renaissance into one class, including the Byzantine and Mohammedan styles, what are commonly called the Romanesque and the Gothic; to which he gives the comprehensive name *Romantisch*. This name, Romantic, used, no doubt, in conformity with the familiar German distinction of Classic and Romantic in literature, is, from the author's point of view, not a bad characterization of the difference between the formal beauty of the classic styles, and the free, more or less naturalistic and often wayward character of the later ones. The translator, by the way, quite misses the point of this distinction, using the common word Romanesque for both *Romantisch* and *Romanisch;* whereas the first is applied, as we have said, to all the styles between the Roman and the Renaissance, and the second, in the ordinary meaning of Romanesque, simply to the round-arched styles of the tenth, eleventh, and twelfth centuries in Western Europe.

It is natural that Herr Rosengarten should describe the classic styles with greater completeness of detail than others; and we find that his interest in his subject and the efficiency of his treatment increase and diminish as he nears or recedes from the classic period. Greek architecture he treats with more minuteness and adequacy than any other. The peculiar characteristics of Greek work, its refined adjustment both of mass and detail, in fact, make it necessary to examine it with minuteness if it is to be examined at all; and its lasting influence on all the later architecture of the world gives it an exceptional claim to careful notice. The author's analysis of it is clear and judicious: we should wish, however, that he had been less shy of collateral historical illustration. The reader's attention, however, is not sufficiently called to the characteristic differences in profile and assemblage between Greek and Roman mouldings, which, since it marks more significantly than almost any thing else, the difference between the two styles, ought not to be neglected.

The Asiatic origin of the Ionic order is distinctly enough noticed; but the Egyptian descent of the Doric, for instance, is entirely ignored. Indeed, the casual reader would not get from the book a suggestion that the Greeks owed any thing to the Egyptians. This is certainly undue caution. For Egyptian art itself, the author shows the respect which an admirer of antiquity could not help feeling. We must mention here what seems to be a curious perversion of the sense of the original by the translator, where, in noticing the Egyptian use of color, he makes Rosengarten say, "Architectural unity was not essentially disturbed by the confusion of the sculptures, *although* the Egyptians laid on their colors in *bold* and *heavy* tints without a knowledge of blending, toning, or shading" (the Italics are our own). The original in our copy reads, "Weil die Aegypter nur eine geringe Zahl von kräftigen und einfachen Farben kannten, welche sie in glatten Tinten ohne Nuancirung und Uebergänge anwandten;" that is, "*because* the Egyptians knew only a small number of strong and simple colors, which they combined in *flat* tints without graduation or blending." We have not at hand the later German edition from which the translation was made; but it is hardly conceivable that a writer of the author's judgment should have modified his first reasonable remark into any thing so undiscriminating as this that the translator puts into his mouth; and the general freedom and diffuseness of the translation lends color to our suspicion of it.

Roman architecture is treated with as much fulness as the scheme of the book would allow, and the influence of its leading forms on early Christian architecture are sufficiently indicated; but, the farther the author gets away from the classical period, the less satisfactory his work becomes. He evidently does not forget the leading facts; but they do not make the impression they would if he had a lively interest in the later styles, or even a real appreciation of them. The notably different characteristics of Romanesque work in the North and South of Europe, out of Italy, the influence of the monastic orders, the development of leading differences in the plans of churches, the movement of the two great currents of Byzantine influence, — all these are left out. When it comes to Gothic, although he remembers that it was first developed by the French, he does not realize that they who first invented it also practised it in its greatest purity and beauty; and really quite passes over the French thirteenth-century work, to fix his attention mainly on the later work of England and Germany. As the purest specimen of English Gothic he mentions the nave of York Cathedral; and of all Gothic his ideal is the Cathedral of Cologne, of which he says that "although it has affinity with the models of French cathedrals, and especially that of Amiens, it bears the stamp of a higher development than its prototypes." Of German Gothic in general he says, "Although the origin of the Gothic style is not German, yet, owing to the fact of its being introduced into that country in a mature state of development, its application and employment is in many districts purer and more harmonious than in any other country." It is not surprising, in view of this lack of appreciation, that the author's discussion of Gothic architecture should be less adequate, and his statements less accurate, than the rest of his work. In treating of the Renaissance he comes again on more sympathetic ground; and his chapters on it, though necessarily very condensed, seem to us well considered. It is to be regretted, that, at a time when mediæval art occupies so much attention, some good history of the development of Gothic architecture should not be accessible to general readers, — something which gives as clear an account of that as Rosengarten does of classic.

We have already spoken of some defects in the translation. In general it is fairly done, though free and often diffuse, as we have hinted. The technical terms have been revised by a capable hand, and are pretty successfully rendered. The translation, however, is not very neatly made, and there are a good many slips. In the printing of the American edition, the illustrations, evidently from electrotype of the originals, are a good deal marred. It seems to be a besetment of many printers, to spoil their blocks by heavily inking them. We are constantly reminded of the injunction of the ingenious founder of one of the oldest illustrated newspapers in the country, that his illustrations must be "all black and white, just like a checker-board."

ACOUSTICS IN ARCHITECTURE.

READ BEFORE THE N.Y. CHAPTER A. I. A., MARCH 7, 1876, BY A. F. OAKEY, FELLOW.

At the request of the Secretary I take pleasure in giving you some account of my investigations and experiments in acoustics, to the study of which, so far as the science relates to building, I have devoted much of my time for more than two years. Although I had at first no other object or aspiration than to inform myself of what is known and practised in the acoustics of building, so many considerations forced themselves upon me as I grew more familiar with the subject, that I determined to devote myself to it with the object of discovering, if possible, some law or system whose application to any circumstances insured success.

After studying, I believe, every thing extant upon the subject of the acoustics of building, — and the library is not voluminous, — I fully appreciated the magnitude of my undertaking, while I had the advantage of all that Lachez, Scott Russell, Rodger Smith, and others have said and done. It was very discouraging to find these authorities at variance on some important points; and to learn from them that intuitive perception of what will or will not do is, after all, the best guide, no two problems being exactly similar; that we can be certain that some appliances are bad, but that the success of adoptions or adaptations in one instance is no criterion for another. While I am indebted to these gentlemen for much valuable and interesting information, my main assistance has come from Prof. Helmholtz', Mr. George Hart's, and Prof. Harwitz' works, though neither have written in relation to building; but the first named on, "The Sensations of Tone as a Physiological Basis for the Theory of Music," and the two latter, have given us scientific treatises on the construction of the violin. I must ask your indulgence if I am obliged to touch upon old and familiar grounds from time to time, but I shall explain with as much brevity as clearness permits; to that end I shall not quote my authorities for any fact, while I shall make no statement that is not proven.

The object of my paper is to prove that there are laws whose application renders acoustic success in building certain, and to show that these laws are based upon the science of music itself; that the fundamental law is harmonic proportion, and that the others are merely the application of well-known phenomena in the science of acoustics. Sound is the impression made upon our ear by a vibration of the atmosphere; and we recognize two classes or kinds of sound, — musical tone, and noise. Musical tone is the impression made upon our ear by a periodic vibration; noise, of a non-periodic or confused vibration. Musical tone is either the periodic vibration of a single resonant body, or the simultaneous vibration of several whose number of vibrations during any period bear a certain simple ratio always expressible by the numbers 1, 2, 3, 4, 5, 6. Noise is merely the result of the combination of incommensurate vibrations, in fact, a sound composed of a number of incongruous musical tones, for every individual sound is a musical tone, and all sounds are composed of musical tones. We know from the most exhaustive investigations that the lowest note of the scale, appreciable as a note, makes 16½ vibrations per second, while the highest makes 4,752; the former by a few great organs, the latter by the *piccolo*. The scale of most piano-fortes has 7 octaves, whose lowest note has 40 vibrations, and its highest 4,000. M. Despretz sounded a D that made 38,016 vibrations by exciting a small tuning-fork with a violin-bow; and, though this is rather beyond my subject, his proof and his means of measuring the vibrations are worth reading.

Suppose a violin-string or piano-forte string to be excited so as to make 132 vibrations per second: the note produced would be the middle C, and the mechanical re-enforcement of the instrument sets the air in vibration, so that it communicates exactly that number to our ear, and we hear the note; but, if the air did not make exactly that number, we should hear another note, or at least the impression of a flat, a sharp, or less would be communicated to us. Now, we know that the first wave of any sound, that is, its first unchecked movement in any or all directions, is from six inches to thirty-two feet, seldom in music the latter; and consequently that the air between us and a sounding body is subdivided into as many spaces, called nodes, all vibrating in exactly the same way, and with the same number of vibrations per second; but, in order to do this, the nodes must be smaller and smaller, weaker and weaker, the farther they extend from the first impulse, until we no longer appreciate any sound, not having sufficiently delicate sense to hear the fall of dust. The initial vibration is in the violin, for instance, whose construction is such as to re-enforce and sustain it, a construction whose main principle is harmonic proportion, that is, in the best of the violins, those for instance by Nicholas Amati or Stradivarius, there is no measurement whose ratio to any other is not expressible by the simple numbers 1, 2, 3, 4, 5, 6. The same is true of most musical instruments, but I have chosen this as the most perfect.

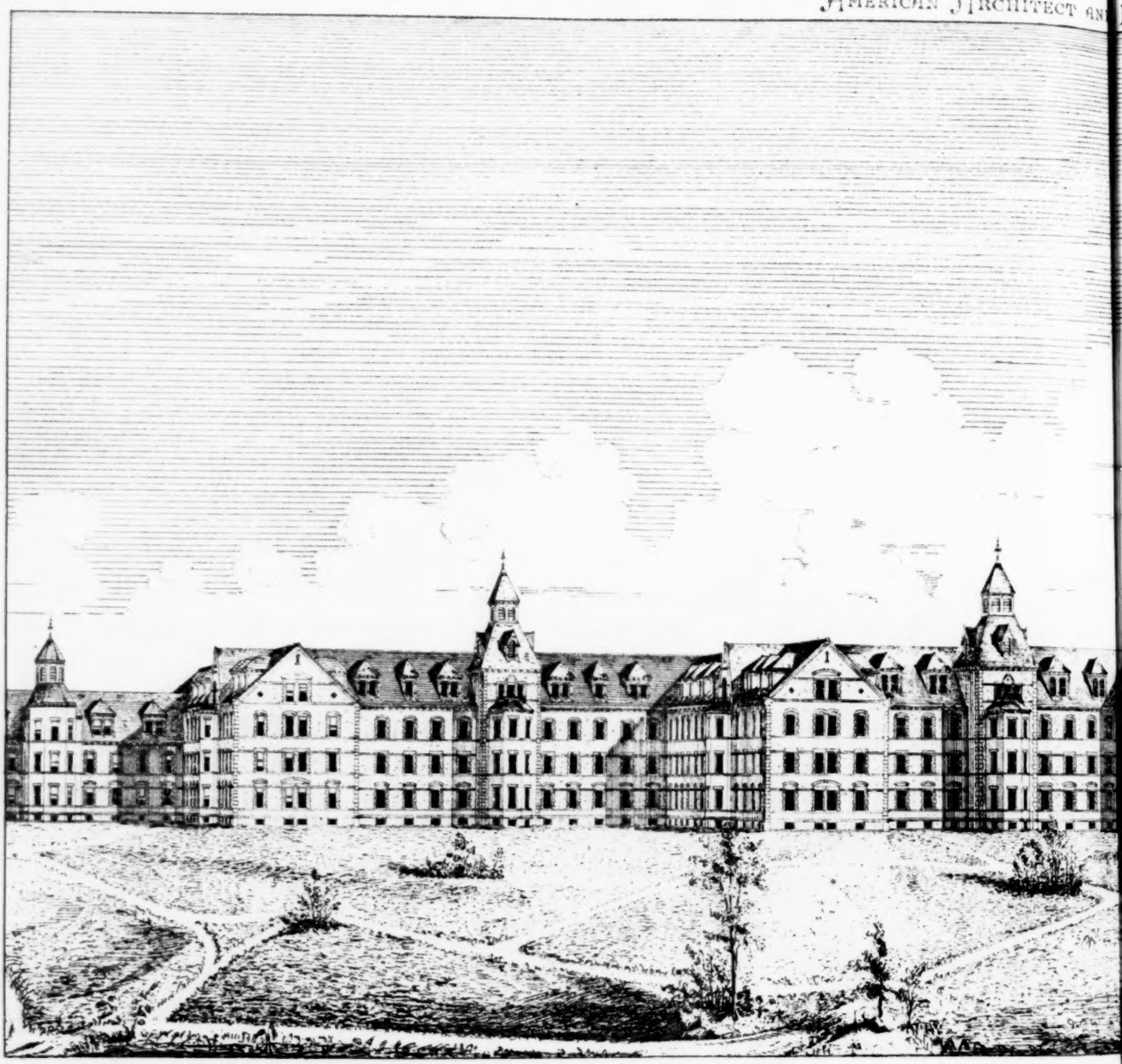
Now, I take it that what we aim at in building a room or hall for sound of any kind is to enable the listener to hear exactly what sounds are produced; in other words, we want the air in our room or hall to vibrate in the same way throughout, so that, wherever the listener may be, his hearing is uninterrupted and distinct. The history of the violin proves, that, unless it is constructed on the harmonic system of relative dimensions, the note is not sustained, but becomes confused owing to either too much or too little space somewhere, so that the vibrations of one note after another cannot accommodate themselves and retain the ratio on which their harmony depends. In a music hall let us apply this fact, and see what it results in. Suppose an orchestra playing and pouring out all their consonant vibrations into a hall whose length, breadth, and height bear no simple ratio; the length, breadth, and height of all these waves of sound are respectively from, say, five to twenty-five feet, for even the size of the waves retain the same ratio as the notes. The greater including the less, the waves are twenty-five feet at first; but this dimension is a good deal governed by the resistance of the atmosphere, and that by the extent of the body of air: therefore if the impulse finds an incommensurate resistance, laterally or in any direction, to its other tendencies, consonant vibration is at once destroyed for those persons in that direction; and, when the reflection from the walls ensues, the vibrations, as they die out and are smothered by fresh sound, must create the same confusion that results in a badly constructed instrument. The successes in acoustic effect are all in favor of this theory of harmonic proportion, and the failures are in violation of it. I found, last summer, a number of corroborations by measuring rooms large and small; and in one instance found a large room in the public hall at Lenox, Mass., which is not in proportion, and had all possible acoustic defects, but which has been made an excellent room for speaking or music, by the erection of bookcases up to the ceiling on two sides, whose depth brought the room into the proportions of 3, 4, and 5.

Whenever I had an opportunity to listen to music at the houses of my friends, I noted the proportions of the rooms, and questioned the performers as to their sensations, learning that the singers always found the drawing-rooms whose dimensions agreed with this theory, the most agreeable; and I was fortunate in hearing the same persons in several different places, some ladies and gentlemen kindly aiding me in my experiment by singing the same music in different rooms of a house on the same occasion; and I was not often obliged to consider the effect of carpets, &c., owing to the fashion of bare floors, matting, &c., during the summer months.

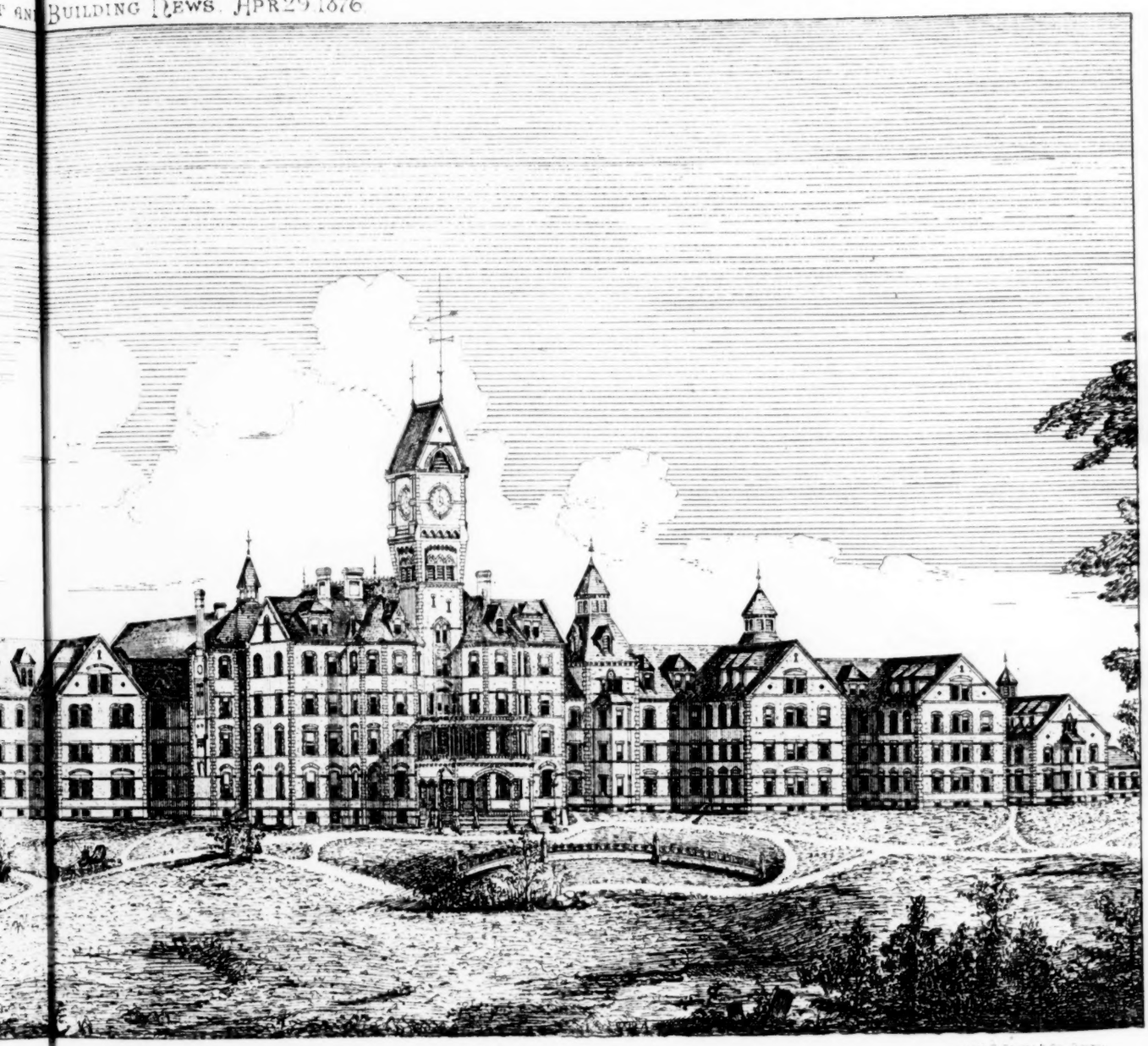
My experiment, however, included the effect of an audience as an absorbent, and I was able to prove Mr. Scott Russell's and Mr. T. Rodger Smith's statements; that is, that one hearer may deprive another of his enjoyment by standing between him and the sound, which fact is a recommendation for Mr. Russell's acoustic curve in seating; and that a room whose hard finish renders our hearing painfully acute, while we recognize no other fault than that we hear too well, is made faultless by the presence of an audience.

In short, I am satisfied that we may safely use plaster finish in case the number of hearers bear a sufficient proportion to the size of the room, which proportion should be, taking the entire contents, one person to every 195 cubic feet. There are two rooms that I tested in regard to this, each measuring 16 x 20 x 12 feet, or in proportion of 3, 4, 5; one is panelled in wood, the other is plastered; and I found with fifteen persons, including a singer and accompanist, that the wood-lined apartment was best; but, on increasing the audience to twenty in the plastered room, there was no appreciable preference. In regard to a choice of materials in finishing wall-surfaces, &c., I believe that we can find no better authority than the construction of the violin affords, provided all considerations have confirmed the choice of wood; for in this perfect instrument every office that wood can accomplish in propagating, transmitting, or sustaining tone, is exemplified.

For the top table, or belly, of the violin, the softest, most porous, and lightest deal is used, because these qualities render the material most sensitive in propagating a vibration imparted by the strings; but the sides are of harder wood, — maple, which could not so readily respond to the string, but whose retaining power is greater because its vibration is slower; the back, or bottom, is again of maple, but still harder, that is, less easily excited, but still more retentive. The qualities of these latter also, in comparison to the deal, make their notes, that is, the note to which they naturally respond, of a lower pitch; in the best violins the natural notes of the belly, sides, and back, form a resolution of a whole note of the scale. The whole violin is varnished on the exterior; the quality of this varnish being important to the tone, because it is used to prevent the least transmission of vibration of the air through the wood, so as to retain the whole force within, giving it only the apertures on either side the bridge to escape when the tone is at its full. From these facts it would seem, that if we desire to increase resonance, and sustain the tones produced, we cannot do better than to adopt well-seasoned wood of the harder descriptions; and I believe the effect of varnishing the back would be appreciated. Of course, no varnish should interrupt the con-



New Lunatic Hospital, Worcester Mas



ER MASS. GEO. DUTTON R.A.I.B.A. ARCHITECT.

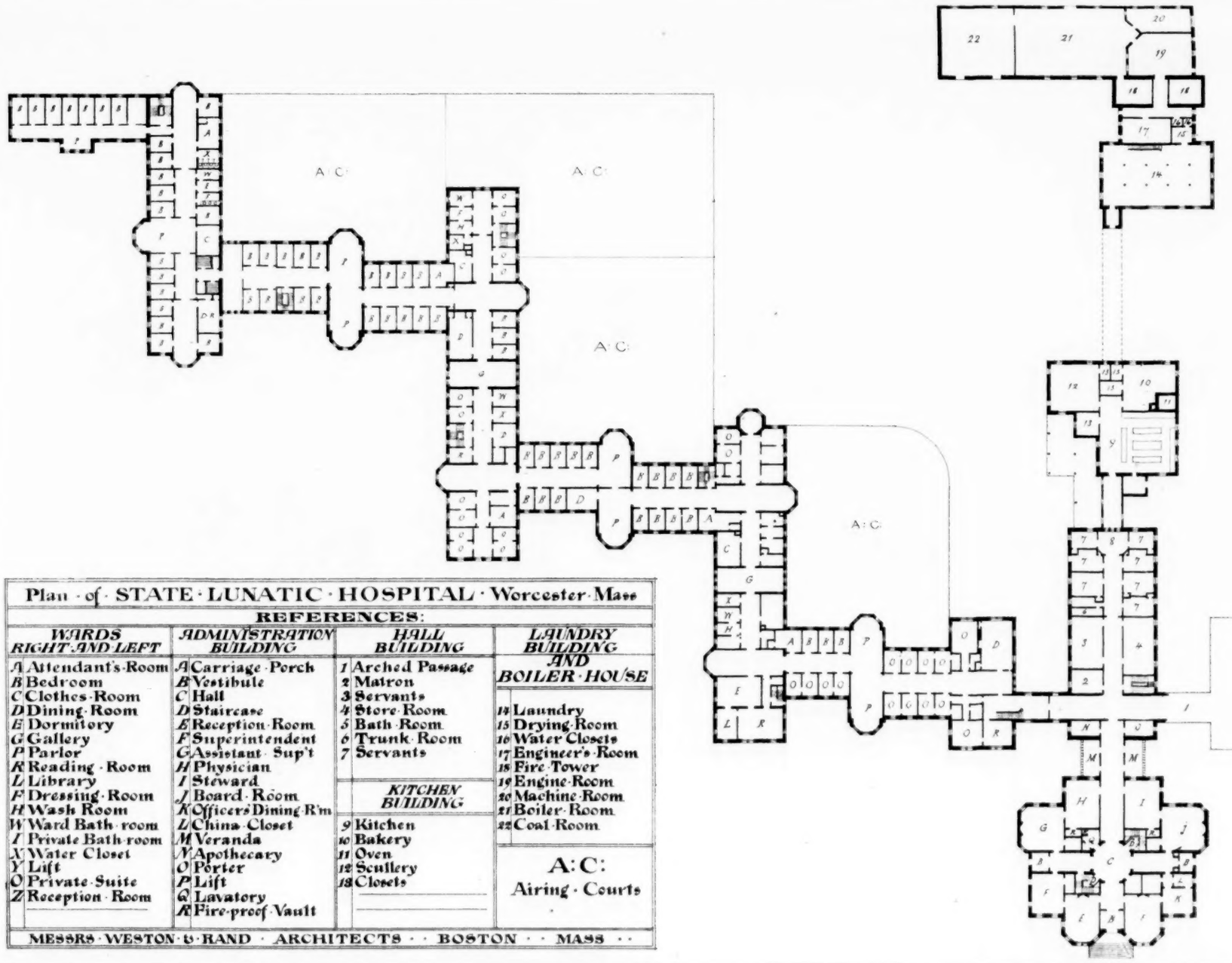
American Architect and Building News. Apr 29 1876.

Emlen T Littell · Architect
111 Broadway · New York ·

Parish Building of St. Timothy's Church

Roxboro'. Pa.

James R. Osgood & Co. Boston



Plan · of · STATE · LUNATIC · HOSPITAL · Worcester · Mass

REFERENCES:

WARDS RIGHT AND LEFT

- A Attendant's Room
- B Bedroom
- C Clothes Room
- D Dining Room
- E Dormitory
- G Gallery
- P Parlor
- R Reading Room
- L Library
- F Dressing Room
- H Wash Room
- W Ward Bath room
- I Private Bath room
- X Water Closet
- Y Lift
- O Private Suite
- Z Reception Room

ADMINISTRATION BUILDING

- A Carriage Porch
- B Vestibule
- C Hall
- D Staircase
- E Reception Room
- F Superintendent
- G Assistant Sup't
- H Physician
- I Steward
- J Board Room
- K Officers' Dining R'm
- L China Closet
- M Veranda
- N Apothecary
- O Porter
- P Lift
- Q Lavatory
- R Fire-proof Vault

HALL BUILDING

- 1 Arched Passage
- 2 Matron
- 3 Servants
- 4 Store Room
- 5 Bath Room
- 6 Trunk Room
- 7 Servants

KITCHEN BUILDING

- 9 Kitchen
- 10 Bakery
- 11 Oven
- 12 Scullery
- 13 Closets

LAUNDRY BUILDING AND BOILER HOUSE

- 14 Laundry
- 15 Drying Room
- 16 Water Closets
- 17 Engineer's Room
- 18 Fire Tower
- 19 Engine Room
- 20 Machine Room
- 21 Boiler Room
- 22 Coal Room

A:C: Airing · Courts

MESSRS · WESTON & RAND · ARCHITECTS · · BOSTON · · MASS · ·

HELIOTYPE

JAMES R. OSGOOD & CO. BOSTON

nection of one piece of wood with another, though, where joints occur, the transmission could be made more perfect by thickly coating the completed joint, so giving no escape. These principles can be refined *ad infinitum* by using soft deal nearest the point where the sound is produced, and grading the quality of wood as it recedes. While all this careful construction would be expensive, I am convinced from my own observations that its effect would not only be appreciable, but decided. Inasmuch as we know that the actual form of a node, or of a body of air in consonant vibration is, spheroidal, and that the curves are parabolic, it is clear that the corners of an apartment are, if any thing, a disadvantage to the embodiment of sound. If this were not true, we should find other than parabolic curves used in the violin ; but as it is, after centuries of experiment, no other form is adopted, and we find the belly and back formed in parabolic curves vertically and horizontally, as well as in the plan ; and these curves are determined by the vibrations of a string sounding the note peculiar to each (the belly and back) ; both these being convex externally, they re-enforce the tone on the same principle that two parabolic reflectors placed face to face re-enforce any sound in either focus. In summing up I should say, that when we have once adopted a plan whose rear wall or that opposite the orchestra is a parabolic curve in plan, dying into the side walls, and when we have adopted Mr. Scott Russell's isacoustic curve for main floor, the form of ceiling and inclination is a natural consequence, and should only vary in form and material, as much as the belly and back of the finest violin.

In regard to galleries, experiment proves that sound does not readily enter a smaller space from a larger, and that the body of air under a gallery is not affected by the vibrations in the open space, except as a secondary action, so causing confusion owing to retardation ; and the body of air under the gallery is, of course, not in harmonic proportion. I do not see the necessity of treating galleries as we usually do, supporting them on columns, and slanting the ceiling upwards and backwards to the wall : no worse form for consonant vibration could be devised. What is to prevent our gallery being carried on an iron structure, formed of curved supports, each one curving upward and outward from the floor behind the back row of seats, in a parabolic curve, on which the ceiling should be formed? This can be stayed back to the wall at any inclination according to the floor above ; and any projection can be safely attained, while no inconvenience is inflicted upon the spectators beneath by the obstruction of the usual supporting columns; and this curve can be well treated in decoration.

As to the ceiling above, in order to preserve the proportions, the same inclination should be given that exists on the main floor ; and there is ample authority for not only curving the cornice, but for very slightly curving the whole ceiling. In regard to ventilation, heating, &c., my experience coincides with the authorities I have cited, that cross draughts and currents set from the hearer are any thing but an advantage ; that the current of air should set towards the audience. In private rooms there is not much effect either way ; but I have deprived a listener at the end of a public hall, of the force of sounds produced at the other, by opening two opposite windows at the sides, thus setting a cross-current ; and restored his hearing by shutting one, and opening the door behind him. From all this I take it, that while we can be certain of our ventilation, and can determine the best materials, the point that insures our success, since these auxiliaries are under control, is harmonic proportion.

THE ILLUSTRATIONS.

NEW LUNATIC HOSPITAL, WORCESTER, MASS. GEO. DUTTON RAND, ARCHITECT.

This hospital is situated in the city of Worcester, about one mile and a half from the business centre. The buildings are well placed as respects sanitary advantages. The stone used, both in the foundations and superstructure, is an intractable ferrugineous gneiss, which it is practically impossible to use otherwise than as rubble walling. The window and door openings therefore, and a few belts and relieving arches, are laid in red brick; while the angle-quoins, plinths, belts, sill-courses, lintels, copings, and other stone-work necessary to be wrought, have been made of granite from Mason, N.H. This has not increased the cost beyond that of a plain brick building of equal magnitude. The plan is modelled on the one that now prevails in this country, and consists of a series of wards or sections connected with each other, and with the central group of administrative buildings, by galleries and corridors. Near the centre of each section is a broad transverse break in the central corridor, with a large bay at each end. These rooms make a double apartment, measuring 16 feet in width by 58 feet in length, and constitute the day-rooms for the patients. A hall 44 feet wide by 78 feet long, with stage, ante-rooms, and gallery, is provided in the upper story of the rear centre building. This hall is intended for the gathering of the inmates for amusement, as well as for religious services each Sunday. The general kitchen for the institution is in the rear of the building last named; and the grade about it has been so arranged that its floor is at the same level with the basement floors of the wards ; so that the food-car can be easily sent from the kitchen to the dumb-waiters which serve the numerous dining-rooms. The kitchen, bakery, and scullery constitute a separate building, each room finished to the roof, and thoroughly ventilated. The laundry, also, is placed in a building entirely separated from the patients' quarters, and groups with the buildings comprising the boiler-house, the engine-room, the carpenter and machine shops, the coal-bunkers, and the fan-tower. This group is about 200 feet in the rear of the hall-building, and is intended to be connected therewith only by an elevated corridor. All the buildings are heated by steam radiators placed in air-chambers in the basement, supplied by fresh air driven in by two fans, each of 14 feet diameter. These fans likewise supply pure air for the forced ventilation in summer ; and drawn as it is from an elevation of 60 feet, and delivered through long and deep vaulted passages, the air must needs reach the rooms of the patients both pure and cool. This air, cool in summer and warm in winter, and pure always, is delivered into the rooms near the ceiling, while the exit flues for ventilation are near the floors. The latter are gathered into ascending ventiducts in the roof-spaces, and thence discharged through the ventilating turrets, of which there is one of ample size to each section.

The walls, externally of stone, from 18 inches to 24 inches thick, are lined with brick, leaving an air-space between the two. The partitions are also of brick; and the plastering is laid directly on the brick without furring or laths.

All the buildings and the grounds are expected to be finished not later than one year from next October. The total cost, including sewerage, water and gas supply, roads, grading, planting, fences, stable, and all accessories to the completed institution, will but slightly exceed one million of dollars. The building will accommodate about five hundred patients.

THE PARISH BUILDING OF ST. TIMOTHY'S CHURCH, ROXBORO', PENN.

The parish building, like the church, is built of blue-gray mica slate approaching gneiss, trimmed with red brick arches and brown freestone sills. The roof is of dark blue slate banded with red slate. The floor of the porch is on the level of the church floor; and a timber, cloister-like passage connects the porch with the church. From the porch a flight of steps leads up to a large Sunday-school room, or chapel, and two class-rooms ; from the same point another flight leads down to a large and a small guild-room, and to a parish schoolroom.

THE USE OF MOULDED BRICK. — II.

BY G. C. MASON, JUN., F.A.I.A.

In Northern Italy, although surrounded by endless quarries of granite and marble, the artist and the architect seem to have delighted in the use of clay, worked into brick and terra-cotta. Nowhere do we find such exquisite forms and intricacy of design. The great hospital at Milan is a surprising example. Its front is covered with the most elaborate and beautiful ornament-foliage, heads, &c., rivalling the best sculpture. Many specimens will be found in Street's "Brick and Marble Architecture of Italy," from the plainest dentil to the most elaborately enriched frieze, fairly alive with spirited foliation, peeping out here and there from beneath the shadow of a moulding which serves to protect it from the weather.

Pisa has some elaborate works, both in brick and in terra-cotta. A writer in the London Builder thus describes the Palazzo Agostino, on the Lung Arno, built in the fifteenth century: "The material is a rich red clay, beautifully worked, the principal ornaments being finished by hand after they had left the mould, which imparts a brilliancy usually lacking in moulded ornament; and, basking as they do in the warm sunshine on the Lung Arno, the foliage seems to curl and crisp for very love of light and sunshine." The yellow and red brick of which the Church of Murano was built seems to have been cast into any shape or size required.

Fergusson in his History of Architecture says, "There is perhaps nothing in the North of Italy so worthy of admiration and study as the way in which moulded bricks of various kinds are used for decoration, especially in the civic buildings, and also, occasionally, in the churches.

"Sublimity is not perhaps to be attained in brick-work: the parts are too small; and, if splendor is aimed at, it may require some larger and more costly material to produce the desired effect. But there is no beauty of detail or of design, on a small scale, that may not be obtained by the use of moulded bricks, which are in themselves far more durable, and if carefully burnt retain their sharpness of outline longer, than most kinds of stone."

Ruskin, in his "Stones of Venice," alludes to and illustrates some windows found in a narrow alley. They are wrought entirely of brick with exquisite mouldings; not cast, but moulded in the clay by hand, so that there is not one piece of the arch like another.

He adds, "And here let me pause for a moment, to note what one should have thought was well enough known in England, — yet I could not perhaps touch upon any thing less considered, — the real use of brick. Our fields of good clay were never given us to be made into oblong morsels of one size. They were given us that we might play with them, and that men who could not handle a chisel might knead out of them some expression of human thought. In the ancient architecture of the clay districts of Italy, every possible adaptation of the material is found exemplified, from the coarsest and most brittle kinds used in the mass of the structure, to bricks for arches and plinths, cast in the most perfect curves, and of almost every size, strength, and hardness; and moulded bricks wrought into flower-work and tracery as fine as raised patterns upon china. And, just as many of the finest works of the Italian sculptors were executed in porcelain, many of the best thoughts of their architects are expressed in brick or in the softer material of terra-cotta; and if this were so in Italy, where there is not one city from whose towers we may not descry the blue outlines of Alp or Apennine, everlasting quarries of granite or marble, how much more ought it to be so among the fields of England! I believe that the best academy for architects for some half-century to come would be the brick fields; for of this they may rest assured, that till they know how to use clay they will never know how to use marble."

Bricks are said to have been first used in England by the Romans about A.D. 44. They were also made under the direction of Alfred, A.D. 886. From that time the use of brick has been constant and continuous. The earlier brick buildings were almost entirely constructed with bricks of Roman manufacture, with a peculiar red mortar; but, as the English progressed in knowledge and skill, native bricks were gradually introduced, and at the beginning of the thirteenth century were freely used. Norfolk, from its lack of good building-stone, is particularly rich in brick-work, which will well repay careful study. Wollerton House in this county is a very rich specimen. Among its other details may be mentioned two full-length figures on either side of the entrance, called by Blomfield in his History of Norfolk, "giants or wild men." These figures and some of the other details are entirely of cut brick. The entablature of old Montague House, now forming a part of the British Museum, is also very beautiful. In the Tudor period great effort was made to improve the designs in brick-work, which had become a favorite material for domestic architecture; and many of the details are very fine, particularly in the chimneys, which exhibit an astonishing wealth of imagination in conception, and skill in modelling. They give to those old rambling halls of the Elizabethan era an air of grace and picturesqueness peculiarly their own. A correspondent of The Builder, some years since, thus alludes to them: "How is it that we seem to have entirely lost sight of that beautiful portion of old domestic architecture, — the ornamental brick chimney? Surely there is nothing more handsome than the examples at Hampton Court, Thornburg, Barsham, &c. . . . Possibly I may be merely recording my own ignorance; yet I have travelled much, and seen nothing modern of the kind, except in the hall of Lincoln's Inn, and there how successfully introduced! But those moulds were broken when the work was completed."

To come down still later, we are told that "Stone of course being dear, and not to be thought of, Inigo Jones and Wren had done some very good things in moulded brick; but the legislative wisdom had laid a heavy tax upon all bricks except those of a standard size." This put a stop to all manufacture of art bricks; and consequently ere long we find Nash and Wyatt stuccoing the fronts of houses with cement, in imitation of Roman palaces.

In 1854 an article appeared in The Builder, relating to the "London Company of Tilers and Bricklayers," with extracts from their papers. From this article I take the following notes. Some of them, particularly those relating to the implements of the craft, are very curious. The bricklayers were incorporated in 1568, the governing officers being a master, two wardens, and twenty assistants; there being at that time seventy-eight livery men. Their arms are, "Azure, a chevron or, between a fleur-de-lis argent, between two brick-axes in chief, and a bundle of laths in nose or; crest, an armed hand holding a brickaxe, or; motto, 'In God is all our trust.'" Alluding to their tools and implements, we find such items as these: "The plumb-rule showeth him whether his walling doth range straight and stand upright; which, if neither, there may be a timely mending." The wheelbarrow is honored as an object in heraldry. "He beareth argent a wheelbarrow gules; this is an instrument used much by workmen of the trowell, for the transporting of their materials (for the work) from place to place; and, though the thing carried be of a great burthen, yet by the help thereof and the labour of one man it is with much ease brought to the place designed." There is also mention made of a "hand-barrow" being "supported by hand to distinguish it from the barrow that runneth upon a wheel."

The revival in England of the Queen Anne style, or so called free classic, whatever may be its faults, has, I think, one advantage, in stimulating a desire for the better form of our bricks; which, if that style is to amount to any thing, is a necessity, it being most thoroughly a system of brick construction and ornamentation. But in its use let us not fall into the error of going to the other extreme; but, in our attempts to add grace to utility, let us take to heart the lines of Wordsworth, —

> "Creative Art . . .
> Demands the service of a mind and heart
> Heroically fashioned, — to infuse
> Faith in the whispers of the lonely Muse,
> While the whole world seems adverse to desert."

A BILL[1]

PROVIDING FOR COMPETITIVE DESIGNS FOR THE ARCHITECTURAL WORKS TO BE ERECTED UNDER THE DIRECTION OF THE SUPERVISING ARCHITECT OF THE TREASURY DEPARTMENT.

Be it enacted by the Senate and House of Representatives of the United States of America, in Congress assembled, That, for the purpose of securing the greatest artistic merit in the public edifices to be erected by the Government of the United States, the Supervising Architect of the Treasury Department be, and he is hereby, directed to obtain the designs for works under his jurisdiction by open and general competition, and in the manner hereinafter set forth.

Sect. 2. That the Supervising Architect of the Treasury Department shall, by public advertisement in such newspapers as may be designated by the Secretary of the Treasury, request competitions for all architectural work under his jurisdiction, except alterations and repairs, where the proposed cost of such architectural work is fifty thousand dollars or upwards; and he shall establish equitable rules for such competitions, which shall be set forth in the advertisement; and he shall call together a board of four experts, who shall be appointed by the Secretary of the Treasury, from among the Fellows of the American Institute of Architects, and who shall be in no way, directly or indirectly, interested in the respective competitions for which they are selected as experts. The said four experts, together with the Supervising Architect of the Treasury Department (who shall not engage in these competitions) as their presiding officer, shall decide upon the plan or plans submitted for the contemplated work or works, and shall award such number of prizes as shall have been specified in the rules regulating the respective competitions, according to the merits of the different plans submitted, amounting in the aggregate to not exceeding one-half of one per centum of the contemplated cost of the proposed work. Their decision shall be final, and shall be published in two leading newspapers in Washington. The successful architect of any competition shall prepare all plans, working-drawings, and specifications in duplicate; one set of which shall be filed in the office of the Supervising Architect of the Treasury Department, and shall become the property of the United States, for which he shall receive compensation according to the schedule of charges recommended by the American Institute of Architects, when the estimated cost of the work does not exceed

[1] This bill, prepared in the Treasury Department, was submitted to Congress by Representative Hewitt of New York.

two hundred thousand dollars; that is, three and one-half per centum of the estimated cost. When the expenditure on the proposed work is to exceed five hundred thousand dollars, the compensation of the architect is to be determined by the board of experts, but not to exceed three per centum of the estimated cost. The execution of the work contemplated by the plans shall be carried forward under the superintendence of the Supervising Architect of the Treasury Department; and no changes, alterations, omissions, or additions to the accepted plans and specifications, shall be allowed to be made, which may involve the change of the design or intention of the author, except by authority of the Secretary of the Treasury; which authority shall only be given after consideration of a joint report from the architect and the Supervising Architect of the Treasury Department, upon such proposed changes, alterations, omissions, or additions.

REPORT OF MEETING.

PHILADELPHIA CHAPTER, A.I.A.

The attention of the Philadelphia Chapter of the American Institute of Architects having been directed to the report of the "Advisory Board," appointed by the commissioners of the "New State Capitol" now being erected in the city of Albany, in the State of New York, and having carefully examined the designs of the said Board for the completion of the building, which designs are found in the American Architect and Building News of March 11, 1876, have unanimously adopted the following resolutions: —

Resolved, That this Chapter finds the projected alterations of the designs upon which the aforesaid work is being executed to be at variance with the rules of art, and wholly inconsistent with the harmony, repose, and dignity of a representative public structure.

Resolved, That the "Philadelphia Chapter of the American Institute of Architects" fully agrees with and hereby indorses the statements and opinions of the "New York Chapter," as set forth and expressed in their communication to the Senate of the State of New York under date of March 29, 1876.

Resolved, That the general interests of the public, and of art education, as well as the interests of the profession which this Chapter in part represents, render it of the first importance to urge upon the authorities having control of the work of the New York State Capitol at Albany, not to sanction any design for the completion of the building referred to, which is not entirely harmonious in character and style with the design of the portions of the structure already executed.

Done at a special meeting of the Philadelphia Chapter of the American Institute of Architects, held at the rooms of the Chapter, April 17, 1876.

Signed, Thomas U. Walter, *President.*
Alonzo B. Jones, *Secretary.*

THE GOUX EARTH-CLOSET AND THE ASH SYSTEM.

Among the methods for the disposal of excrement that are having success in the smaller towns in England, that known as the "Goux" is attracting much attention; and is so strongly recommended by its advocates, that it seems worth while to call further attention to it.

The following communication from the Sanitary Review states the case of the Goux system in its most favorable light; and the fact that the corporation of Halifax, after having given it a thorough trial in the case of more than three thousand closets, have bought out the right, and intend to extend the application, is a very significant one: —

"Knowing that your columns are always open to aid in furthering sanitary measures, must be my excuse for troubling you with the following remarks on this method of dealing with excreted matter.

"Having been engaged upon public works for forty years, I fearlessly assert that the Goux is the most effectual, simple, and economic system brought before the public. In doing so I do not wish to imply that other systems have not their advantages; but, having machinery, they are expensive, and liable to get out of order. The use of machinery operates against their general adoption; while that to which I refer — the Goux system — is without machinery of any kind, and its success is entirely dependent upon the person appointed to scavenge. This alone is one great desideratum, as one man can scavenge for one thousand people: thus the onus of failure, if any, will at once be known, and not have to be sought for among the greater number. The cost of adapting an old midden, or of building a new closet, is less than that of any other system.

"Its use will save half the drinking-water supply of the country from contamination, as well as keep seventy-five per cent of the filth now flowing into our rivers for more profitable use in our fields, pastures, and gardens; and the very refuse of a place will be made to act as the disinfectant and devourant of its fæcal matter.

"The manipulation is very simple, and can be done by a boy as well as a man. A tapering tub or container is provided, say eighteen inches high, and twenty inches at its greatest diameter. Upon the bottom of the tub is placed three or four inches of refuse, such as stable-litter, leaves, loft-sweepings, spent tan or hops, sawdust, shavings, shoddy, flax-dressings, or the thousand and one convenient substances to be found in every place. This is mixed with a little soot, charcoal, or other deodorizer. A mould of the same shape as the tub, but six inches less than the internal diameter, is placed upon the four inches of absorbent material referred to; and the space between the mould and tub is packed with the same material.

"One man and boy can pack two hundred containers in the hour; and this is all the manipulation required, except placing and removing the tub at stated times. Many eminent officers of health and other officials have spoken well of the system, of which we believe the advantages to be as follows: 1, its ready adaptation to existing arrangements; 2, its economy as to original outlay, working expenses, wear and tear; 3, its economy of water when the supply is short; 4, it does not pollute our wells or streams; 5, it renders village drainage unnecessary; 6, its profitable utilization of all kinds of refuse; 7, its thorough isolation of houses in cases of infectious disease; 8, typhoid and other fevers are prevented; 9. the manipulation is simple, and a case of neglect can be traced to the proper person; 10, no chemicals are required; 11, the total absence of machinery; 12, there are no pipes to be burst by the frost.

"This system is in use in six colliery villages, several military depots, and in various other situations. The corporation of Halifax have purchased the plant and licenses for 3159 closets now in use, and the right to extend the system to the entire borough.

"I am, sir, your most obedient servant,

"Thomas Mason.

"Zetland House, Hammersmith."

At the same time, it seems difficult to believe that two hundred containers can be prepared by a man and a boy in a single hour, while there there are other statements in Mr. Mason's letter that savor of too much enthusiasm.

This system was carefully and impartially investigated by Mr. Netlen Rodcliffe, who was detailed by the Health Department of the Privy Council of England to examine all of the methods of excrement-disposal now in use. He gave much attention to the Goux closets, especially at Halifax, and says concerning them, —

"Some needless carelessness occurs in lining the pails, in their removal and cleansing, as well as in the cleansing of the night-soil vans, from want of special supervision of the working of the system by officers of the corporation. I noticed, in the course of my inspection, pails imperfectly lined, and some not lined at all; pails which had overflowed from neglect to remove them at the proper time; littering of ash-place in the removal of the ashes; some splashing in van, and leakage from van into street; and unsatisfactory arrangements for cleansing the vans at the wharf, whence the pails are despatched to the manure-works. These defects, insignificant as compared with the advantages which those parts of the town derive from the system where it has been introduced, but exciting prejudice against it, entirely arise from the want of such special supervision as the corporation should exercise over it."

He examined the Goux closets at Salford also, with the following result: —

"In every instance where a pail had been in use over two or three days, the capacity of absorption of the liquid dejections, claimed by the patentee for the absorbent material, had been exceeded; and whenever a pail had been four or five days, or a week, in use, it was filled to the extent of two-thirds or more of its cavity with liquid dejections, in which the solid excrement was floating. The contents, in fact, differed nowise in aspect, except in the cases where a portion of the dyewood lining had broken down, and fallen into the liquid, from what we should have expected if a simple, unprepared pail had been used. It was suggested that a part of the sloppiness of the pails probably depended

upon the fact of chamber-pots having been emptied into them; but, although the regulations for their use permit this to be done, we did not always find on inquiry that even this source of wetness had been in operation."

It is difficult to believe that the use of the heterogeneous packing material described can be so uniformly successful as is necessary to a satisfactory application of the system; and although with proper supervision it may be very generally effective, and always an improvement on the old deep vault, the evidence in favor of Marle's earth-closet, or its congener the dry-ash closet, is to be preferred.

Dr. Latham, medical officer of health, gives the following testimony in favor of the ash-closet, or that form of it known as the cinder-sifting dry-closet, where ashes are first thrown upon a screen, their finer parts delivered into the receptacle under the seat, and the cinders separated for burning: —

"On the occasion of the recent visit to Salford, of the Health Committee of one of our large neighboring towns, on a tour of sanitary inspection, the chairman, a medical man, closely questioned a number of the occupants of houses where the midden system had been exchanged for the new cinder-sifting dry-closet, as to the effect of the change on their health; and the reply he almost invariably received was to the effect that they had experienced much greater comfort and better health since the change to the new system; and it is a matter of fact for which I am myself responsible, that, whereas diarrhœa used to reign almost endemically during the autumn and summer months in some houses to which middens were attached, that disease has been seldom, if ever, heard of since the change to the new closet; whilst, if any should doubt the improvement effected by the change of system in the air which the inhabitants of these houses breathe, let him pay a visit to M'Clearey Street, Pendleton, where about forty new ash-closets have replaced the middens which two years ago smelt so horribly as to render it almost impossible to approach them for the purpose of inspection."

NOTES AND CLIPPINGS.

INSANE-ASYLUMS. — Dr. Wilbur of Syracuse, in a recent report to the State Board of Charities of New York, draws a comparison between English and American asylums, which is very much to the disadvantage of the American asylums. He lays great stress on the greater plainness and economy of the English buildings. He accuses the Americans of squandering money that should be used only in the interest of the patients, in erecting "palaces" which gratify local pride, and lead to a foolish rivalry between States, counties, and townships. He says that in Massachusetts the cost of the asylum buildings are from twenty-five hundred dollars to three thousand dollars per patient, in New Jersey more than three thousand dollars, and in New York from four thousand dollars to five thousand dollars. In England, on the other hand, the highest cost, including cost of land and furniture, is only about seven hundred and fifty dollars per patient.

BRUMIDI. — The Philadelphia Times says that no one can remember when Brumidi was not painting in the Capitol. Years ago a commission was appointed, and his reign seemed to be at an end; but the next winter he was painting away as gayly as ever. Raphael in the Vatican was a fool to Brumidi in the Washington Capitol. High up in the lofty dome, or down in the darkest corridors where no foot but that of the watchman ever treads, Brumidi paints away, covering the walls with men and women, and gods and goddesses, and birds and beasts and flowers. By the yard or by the mile, by the week or by the year, he paints on, paints ever. How it is all paid for, goodness only knows.

BUILDING SOCIETIES. — So soon as the charter is obtained for the Boston Building Club, three hundred gentlemen stand ready to begin work under the co-operative bank system, like that in operation in Philadelphia. Three sites on which to locate are under consideration, — Arlington Heights, Crescent Hill, and Braintree.

CINCINNATI. — The Germans inhabiting the west end of the city, or as it is styled *trans Rhenum*, are actively engaged in building dwelling-houses and stores. More than sixty brick and stone buildings have been begun; the estimated cost of each dwelling averages about fifty-five hundred dollars. About forty of these are single dwellings, the others being in blocks; and of the whole sixty only about a fifth have the lower floors given up to commerce.

THE SAND-BLAST. — The sand-blast works at West Rutland, N.Y., have been engaged for the last year and a half in the manufacture of headstones for the national cemeteries. The names are inscribed upon the stone by the sand-blast in fifteen minutes.

ISTHMUS OF PANAMA. — De Lesseps says he will cut a forty-two mile canal across the Isthmus of Panama if the funds are furnished him.

INSANE-ASYLUM, COLUMBUS, O. — The Central Lunatic Asylum Investigation Committee, at a recent session, examined John Graham, civil engineer, of Columbus, O., who testified that he had made a casual examination of the building, and thought it was the worst job of brick-work he had ever seen.

LIERNUR'S PNEUMATIC SEWERAGE. — The following extract from the Builder refers to an investigation on which the severer critics of the Liernur system based some hope of its final overthrow; and the fact, that Mr. Haywood after a severe scrutiny has spoken of it so favorably as he has, will add materially to its claim for further investigation and experiment.

In accordance with instructions from the City Commissioners of Sewage, Mr. William Haywood, their engineer, has investigated Capt. Liernur's pneumatic system of sewerage, has conferred with that gentleman personally, visited Amsterdam and Leyden, where the system has been partially applied, and presented a careful and valuable report on the subject. Mr. Haywood sees the objections which may be taken to the system, as well as the advantages it possesses, and in conclusion says, —

"That the pneumatic system is not perfect on all points, is certain; but its value must be considered by the side of the results of the existing system, with which it seems to me there is a growing dissatisfaction, and, as to its sanitary value, many doubts; and for that reason it seems to me important that the pneumatic system should have a full and fair trial in England."

He thinks it would be best tried in a poor district, where, the population being usually more dense, more excreta is produced from a given area; and where the consumption of water being less, and the condition of the ordinary siphon-pans more resembling that of the pans under the Liernur system, water-supply might be omitted or withdrawn from the closets without objection from the inhabitants. In the metropolis and in most of the great towns, under the Artisans' Dwellings Improvement Act, large numbers of dwellings for the working classes are likely to be built, and there the system could be tried under favorable conditions; in the suburbs of London, whole districts are also being laid out for the residences of those in very moderate circumstances, and there a similar opportunity offers itself."

THE ALBERT MEMORIAL. — The wooden covering has lately been removed from the colossal statue of the late Prince Consort; and the tribute from "Queen Victoria and her People" to the memory of Prince Albert is at length completed. The prince is represented seated, bareheaded, and dressed in the robes of the Order of the Garter. The statue rests upon a stone sarcophagus, the sides of which are divided into panels, and enriched with armorial bearings and the insignia of knightly orders.

BRICK FAMINE. — Bricks cannot be had at present in London for prices which will allow building to go on. At the close of the year, bricks were sold in London for about six dollars and fifty cents per thousand; and they are now scarce at thirteen dollars per thousand. During the last three months very few bricks have been made, in consequence of the unfavorable weather. The old stocks are getting exhausted; and it will be at least three months before new bricks can be placed in the market, even should the weather be favorable.

RUSKIN. — Most people, when they read any of Mr. Ruskin's writings, are not only annoyed by the one-sided and extreme view which he takes of the subject in hand, but are also irritated by the overbearing way he has of treating the opinions of an opponent. This brusqueness of manner, if it be merely brusqueness, sometimes leads him to do and say things which in another person would be considered insolent and underbred beyond expression. Recently, when invited to open the Exhibition of the Society of Artists at Sheffield, he declined the proffered honor, accompanying the refusal with the uncalled-for fling, that "no lover of art would take up his abode in Sheffield for a million sterling a year." We question if even Englishmen would carry their love of free speech so far as to approve of such insolence.

PROPOSED PEAL OF BELLS FOR ST. PAUL'S. — The Grocers', Clothworkers', and Fishmongers' Companies, have each presented a bell for the proposed peal of bells in St. Paul's Cathedral, London; and, besides contributions from the Plumbers' Company and others, a gentleman has undertaken to provide the money for the chimes.

THE HIGHEST CHIMNEY. — We believe that the highest chimney ever built is that of the Crawford-street Chemical Works, Port Dundas, Glasgow, in Scotland, having a height of 454 feet above ground, with a foundation 14 feet deep; diameter of foundation, 50 feet; at the ground surface, 32 feet; and, at the top, 12 feet 8 inches. Nearly one and a half million bricks were used; and its total weight is estimated at six thousand tons.

DAMPNESS. — To obviate the dangers arising from dampness in brick buildings, a French architect, M. Sebille, has patented a simple and inexpensive process for injecting brick, tiles, and other earthen materials, with the tarry residue from the manufacture of illuminating gas. Brick thus prepared is said to be rendered absolutely waterproof.

OIL-CANS. — It has been left to the Nevada Chinaman to find a way of utilizing worn-out oil-cans. He fills these with earth; and, piling one on top of another, he soon has a wall capable of carrying the roof of his low-studded hut.